ANTELOPE CREEK LIVING CENTER (PWS 7190001)
SOURCE WATER ASSESSMENT FINAL REPORT

November 6, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the Antelope Creek Living Center, Darlington, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic chemical (IOC, i.e. nitrates, arsenic) contaminants, volatile organic chemical (VOC, i.e. petroleum products) contaminants, synthetic organic chemical (SOC, i.e. pesticides) contaminants, and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Antelope Creek Living Center drinking water system (PWS 7190001) consists of one ground water source. The well rates an overall moderate susceptibility to IOCs, VOCs, SOCs, and microbial contaminants. The hydrologic sensitivity of the aquifer and the system construction for the well are rated moderate.

For the assessment, a review of laboratory tests was conducted using the Idaho Drinking Water Information Management System (DWIMS) and the State Drinking Water Information System (SDWIS). No VOCs, SOCs, or microbials have been detected in the Antelope Creek Living Center Well #1 above maximum contaminant level (MCL). The IOCs barium, fluoride, and nitrate have been detected in the well at levels less than established MCL.

The delineation for the system's well encompasses two different corridors. One extends to the northwest with the 10-year time-of-travel (TOT) zone reaching approximately eight miles. The second portion of the delineation is approximately 2 1/2 miles in length, and extends northward in the valley and crosses Highway 93 within the 3-year TOT zone. The delineation has one potential contaminant source besides the highway corridor. That source is a Bureau of Land Management dumpsite located in the 10-year TOT zone.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Antelope Creek Living Center, drinking water protection activities should focus on correcting deficiencies outlined in the 1996 Sanitary Survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Any spills from the potential contaminant source listed should be carefully monitored, as should any future development in the delineation areas. As Highway 93 and the Union Pacific Railroad crosses the delineation zones, particular attention should be paid to any contaminant spills that may occur along those major transportation corridors. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Since most of the designated areas are outside the direct jurisdiction of the Antelope Creek Living Center, partnerships with state and local agencies and industry groups should be established. These collaborative efforts are critical to the success of drinking water protection. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed drinking water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ANTELOPE CREEK LIVING CENTER DARLINGTON, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Drinking Water Quality

The Antelope Creek Living Center Public Water System (PWS) includes one well located in Custer County (Figure 1). The most recent Sanitary Survey Report indicates that the PWS has 1 connection and serves a population of 43. There are no current water quality issues currently facing the Antelope Creek Living Center. There have been no recorded VOC or SOC or microbial detection in the system. The IOCs barium, fluoride, and nitrate have been detected in the water but at levels considerably less than MCL levels.

Defining the Zones of Contribution – Delineation

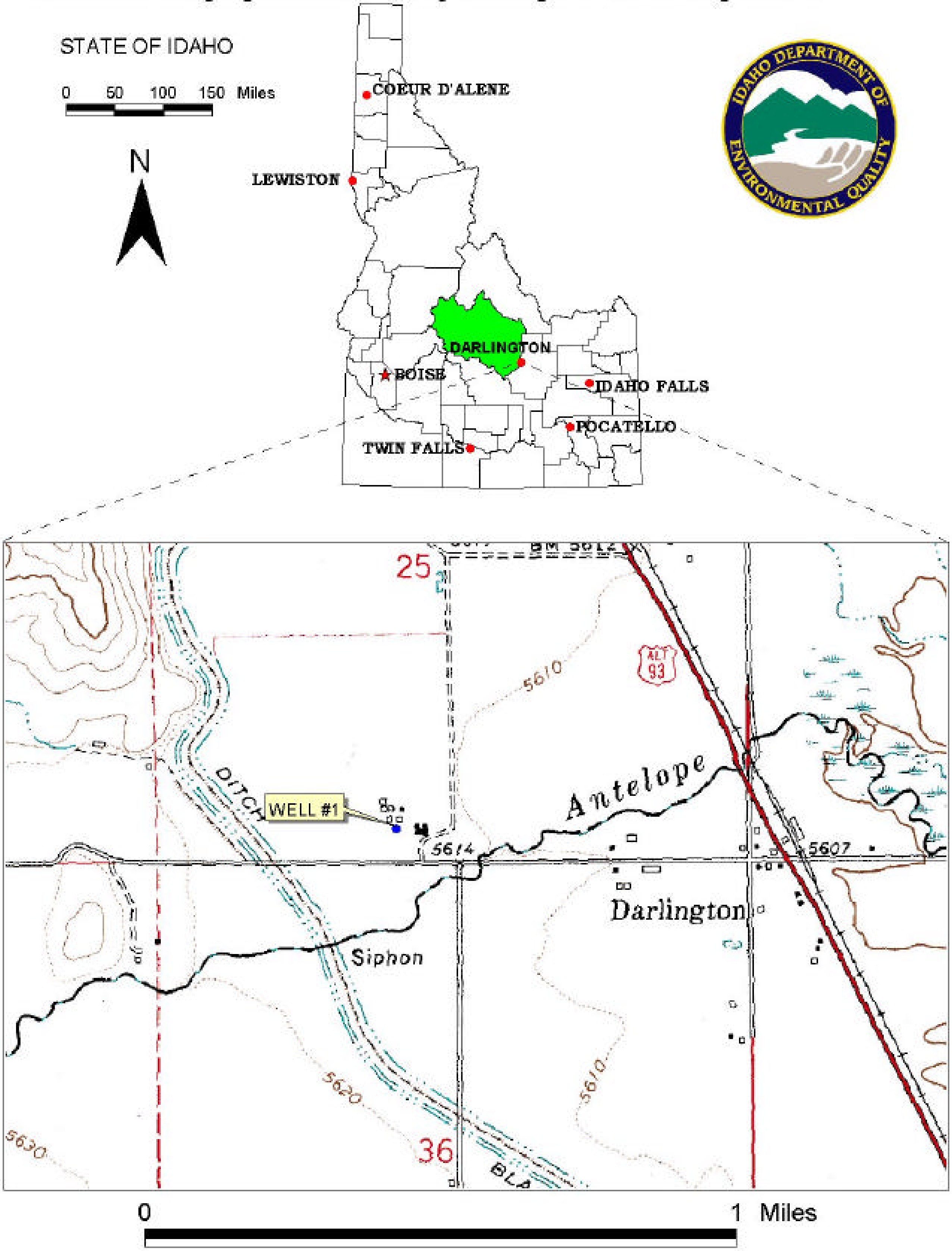
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated aquifer in the vicinity of the Antelope Creek Living Center. The computer model used site-specific data, assimilated by WGI from a variety of sources including local area well logs, operator provided information, and hydrogeologic reports (detailed below).

The Big Lost River basin occupies approximately 1,400 square miles at the northern side of the Eastern Snake River Plain (Szczepanowski, 1982). The basin is northwest to southeast trending and is bound on the east by the Lost River Range and on the west by the White Knob Mountains. The adjacent mountains are composed of a sedimentary sequence of limestone, dolomite, quartzite, sandstone, shale, and argillite. Granitic rock occurs in some places within the sedimentary units, while volcanic materials cover an extensive area at higher elevations. Basalt from the Snake River Plain is also found at the surface in the south end of the Big Lost River basin.

The Big Lost River flows through the axis of the valley and is controlled by the Mackay Dam. An examination of the historical stream flow data (USGS, 2000a) indicates that base flow of the river near Mackay is relatively constant during the year, except during the summer months when the flow rate is increased. It is believed that the Big Lost River stage controls the regional ground-water levels. Flow in the irrigation system (USGS, 2000b) along the edge of the foothills is intermittent and occurs only in the summer months when irrigation demand is high.

The valley-fill sediments are present in two forms: cemented and unconsolidated. Calcite cement binds together fragments of sandstone, quartzite, and limestone of the old colluvial fans. The unconsolidated materials are composed of clay- to boulder-size particles and range greatly in degree of sorting. The alluvial fill varies from 2,000 to 3,000 feet thick in the valley (Szczepanowski, 1982, p. 5).

FIGURE 1. Geographic Location of Antelope Creek Living Center



The primary source of water to the alluvial aquifer is precipitation at higher elevations that infiltrates through fractures in the bedrock. Some of the water is discharged to streams, and some continues downslope entering the valley alluvium. Numerous streams lose all their flow to the highly permeable colluvial fans found near the valley floor. Other sources of recharge include precipitation on the valley floor, irrigation, and leakage from canals. Annual precipitation within the basin is elevation-dependent and varies from 10 to 45 inches (Szczepanowski, 1982, p. 3).

Natural discharge of ground water occurs as gains to the Big Lost River, as underflow leaving the basin south of Arco, and as evapotranspiration where the water table is at or near the land surface.

The water table ranges in elevation from about 6,300 feet above mean sea level (ft msl) near Challis to 5,200 ft msl south of Arco (Briar et al., 1996). Ground-water flow direction generally follows the valley centerline toward the south and southeast. The valley fill aquifer generally is unconfined, although perched and artesian conditions are known to occur. Localized perched and artesian zones developed as the result of widely scattered lenses of low-permeability materials (Szczepanowski, 1982, p. 6).

Estimates of transmissivity, based on an aquifer test in the Lower Big Lost River Valley between Antelope Creek and Butte City (Bassick and Jones, 1992), range from 61,000 to 330,000 ft^2/day, with a geometric mean of 144,535 ft^2/day. Analyses of the test data indicated that the bedrock/ valley-fill contact functions as a barrier boundary.

The actual data used by WGI in determining source water assessment delineation areas are available from DEQ upon request.

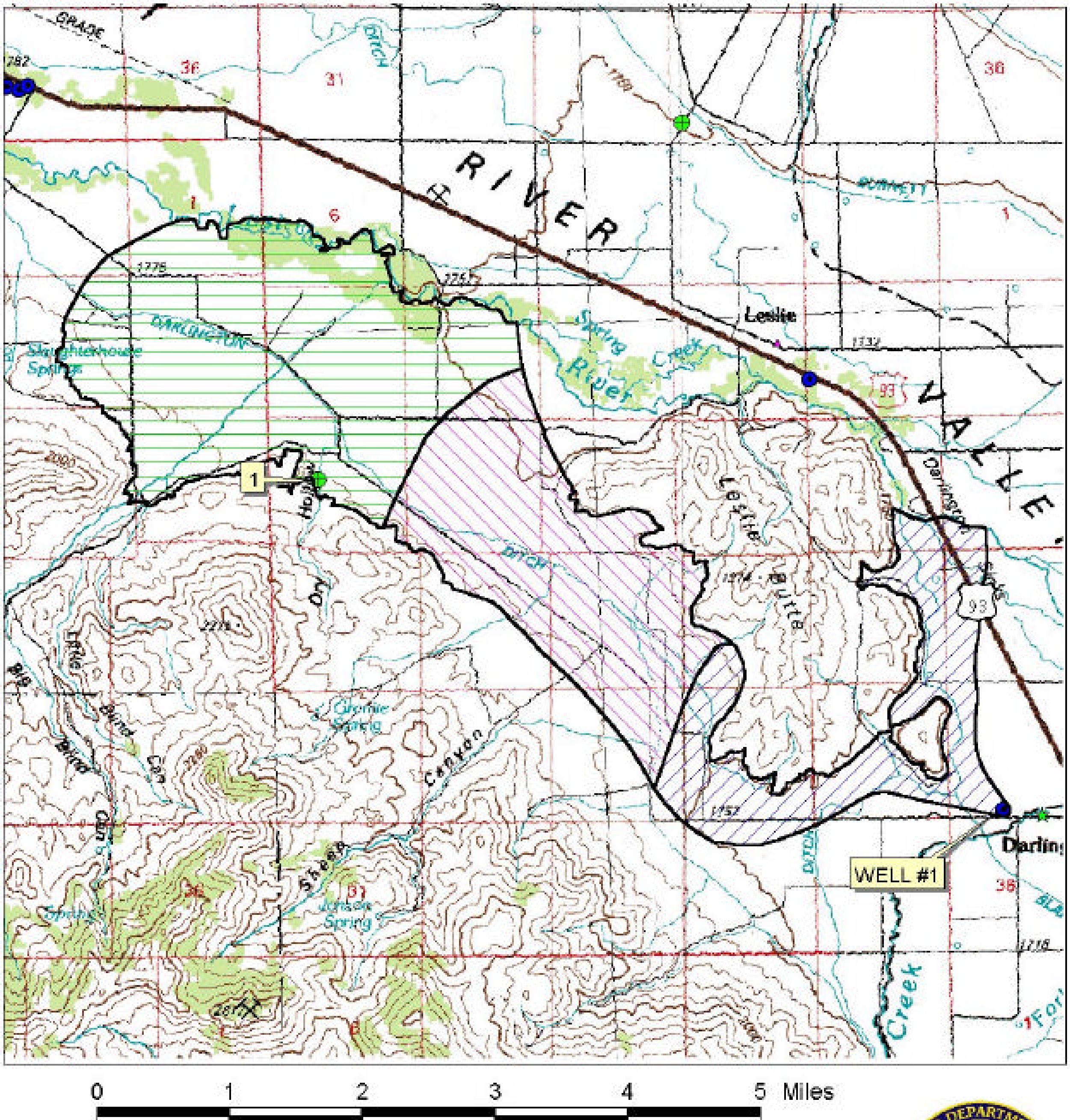
Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the Antelope Creek Living Center and from available databases.

The dominant land use outside the Antelope Creek Living Center is irrigated agricultural land. Land use within the immediate area of the wells consists of urban, commercial, and industrial land uses, Highway 93 and irrigation canals (Figure 2).

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Figure 2. Antelope Creek Living Center Delineation Map and Potential Contaminant Source Locations



PWS# 7190001
WELL #1

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in the summer of 2001. This involved identifying and documenting potential contaminant sources within the Antelope Creek Living Center source water assessment areas through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ.

The potential contaminant sites located within the delineated source water area are found in Table 1. The potential contaminant site is a Bureau of Land Management dump site. Highway 93 and the railroad cross the 3-year TOT zone. If an accidental spill occurred along either of these corridors, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer.

Table 1. Antelope Creek Living Center Well #1, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
	Highway 93	0 - 3	GIS Map	IOC, SOC, VOC, microbial
	Railroad	0 - 3	GIS Map	IOC, SOC, VOC, microbial
1	BLM Dump	6-10	Database Search	IOC, SOC, VOC

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity rating is moderate for well #1 (see Table 1). This reflects the poor to moderate-drained nature of the soil, which tends to reduce the downward movement of contaminant and lower the score. On the other hand, the vadose zone is composed of gravel, there is no significant aquitard present, and ground water at less than 300 feet. These factors tend to increase the likelihood of contaminants reaching the aquifer.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The Antelope Creek Living Center well scores moderate for system construction. The Antelope Creek Living Center drinking water system consists of one well that extracts ground water for community, commercial, and recreational uses. The well was drilled in 1998. Well #1 was completed to a depth of 130 feet. It has a 6-inch diameter casing with well screen intervals from 112 to 128. The static water level is 36 feet below ground surface.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of 0.322-inches, ten-inch diameter wells require a casing thickness of 0.365-inches, and twelve-inch diameter wells and above require a casing thickness of 0.375-inches. Pump tests for wells producing greater than 50 gpm require a minimum of a 6-hour test.

Potential Contaminant Source and Land Use

Due to some potential contaminant sources, much agricultural land with low county level nitrogen and total agricultural chemical usage, the Antelope Creek Living Center well score high land use susceptibility for IOCs and SOCs, moderate land use susceptibility for VOCs (i.e. petroleum products), and low susceptibility for possible microbial contamination.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year TOT (Zone 1B) and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the Antelope Creek Living Center well scores in the moderate range for IOCs, VOCs, SOCs, and microbial contaminants (see Table 2).

Table 2. Summary of the Antelope Creek Living Center Susceptibility Evaluation

Source	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well # 1	M	H	M	H	L	M	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of total susceptibility, the well in the Antelope Creek Living Center drinking water system rates moderate susceptibility in the IOC, VOC, SOC and microbial contamination categories.

Despite the moderate susceptibility ratings for the Antelope Creek Living Center, the system continues to provide high quality water to its residents. There has never been a recorded VOC, SOC, or microbial detection in the sampled well water. IOCs have been detected at levels much lower than established MCLs. Despite the high quality of water currently being provided, the Antelope Creek Living Center should be aware of the possibility of future contamination from potential contaminant sources and from continued agricultural practices.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Antelope Creek Living Center, drinking water protection activities should focus on correcting deficiencies outlined in the 1996 Sanitary Survey. Any spills from the potential contaminant sources described in Table 1 should be carefully monitored, as should any future development in the delineation areas. As the three-year zone crosses the Highway 93 corridor, an emergency response plan should be in place to deal with cleanup and containment of any large-scale spills of hazardous materials if they occur along the major corridor. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Any new PWS well should meet the *Recommended Standards for Water Works* (1997) as outlined in IDAPA 37.03.09 and IDAPA 58.01.08.550. Since most of the designated areas are outside the direct jurisdiction of the Antelope Creek Living Center, partnerships with state and local agencies and industry groups should be established. These collaborative efforts are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. The primary source of potential contaminants comes from the transportation corridors within the delineation. Therefore the Department of Transportation and/or other federal and state agencies should be involved in protection activities.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office	(208) 528-2650
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at (208) 343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

References Cited

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Lindholm, G.F., 1996, Summary of the Snake River Plain Regional Aquifer-System Analysis in Idaho and Eastern Oregon, U.S. Geological Survey Professional Paper 1408-A, 59 p.

Szczepanowski, S.P., 1982, Review of Ground-Water Conditions in the Big Lost River Valley, Idaho Department of Water Resources. Idaho.

Whitehead, R.L., 1992, Geohydrological Framework of the Snake River Plain Regional Aquifer System, Idaho and Eastern Oregon, U.S. Geological Survey Professional Paper 1408-B, I-FY92, 32 p.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

Appendix

Antelope Creek Living Center
Well Susceptibility Analysis

Ground Water Susceptibility Report   Public Water System Name : ANTELOPE CREEK LIVING CENTER   Well# : WELL #1

Public Water System Number 7190001   12/21/01 8:52:06 AM

1. System Construction

		SCORE
Drill Date	6/13/98	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1996
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	2

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	4

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	6	2	2	
4 Points Maximum		4	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		12	10	12	8

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	YES	2	0	2	
Sources of Class II or III leacheable contaminants or	YES	1	0	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	2	5	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		22	17	22	8

4. Final Susceptibility Source Score

	IOC	VOC	SOC	Microbial
4. Final Susceptibility Source Score	10	9	10	9
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate